

IN THE SPECIFICATION

Please amend the Title on page 1, line 2 as follows:

SOLID STATE IMAGE SENSOR DEVICE FREE OF INFLUENCE ON OPTICAL  
BLACK LEVEL BY SIGNAL POTENTIAL CHANGE OF OPTICAL BLACK PIXELS

Please amend the paragraph beginning at page 1, line 25 through page 2, line 8 as follows:

a1  
FIG. 10 shows an example of such a kind of CMOS image sensor in the prior art. In FIG. 10, reference numerals 1, 2, 3 and 10 represent an image sensing cell array, a vertical shift resistor, a horizontal ~~shift~~ shift resistor, and a timing signal generator, respectively. A plurality of unit cells 13 are arranged in the image sensing cell array, i.e., an image sensing cell area 1. Each of the unit cells 13 is composed of a photodiode 8, a read transistor 14, a driver transistor 15 of a source follower circuit, an address transistor 16, and a reset transistor 17.

Please amend the paragraph at page 8, line 13 through page 9, line 11 as follows:

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vert  
In a solid state image sensor device according to the first aspect of the present invention, at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photo-sensitive pixel region, may be excluded from being short-circuited with the at least two vertical signal lines by the wiring, and at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of the photo-sensitive pixel region, may be excluded from being short-circuited with the at least two vertical signal lines by the wiring. When a solid state image sensor device according the first aspect of the present invention is structured as such, then even if the signal potentials at the optical black pixels at the edge portion of the optical black pixel region are changed by light leaked from

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the photo-sensitive pixel region into the edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change edge portion of the optical black pixel region are changed by light leaked from a peripheral portion opposite to the photo-sensitive pixel region into the opposite edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change. Thus, the optical black signal can be made more stable.

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Please amend the paragraph at page 12, line 11 through page 13, line 10 as follows:

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a3

In a solid state image sensor device according to the second aspect of the present invention, at least one of the vertical signal lines in the optical black pixel regions, which is at the side of the photo-sensitive pixel region, may be excluded from being short-circuited with the plurality of vertical signal lines by the wiring, and at least one of the vertical signal lines in the optical black pixel regions, which is at the opposite side of the photo-sensitive pixel region, may be excluded from being short-circuited with the plurality of vertical signal lines by the wiring. When a solid state image sensor device according the third aspect of the present invention is structured as such, then even if the signal potentials at the optical black pixels at the edge portion of the optical black pixel region close to photo-sensitive pixel region are changed by light leaked from the photo-sensitive pixel region into the edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change. Furthermore, even if the signal potentials at the optical black pixels at the opposite edge portion of the optical black pixel region are changed by light leaked from a peripheral portion opposite to the photo-sensitive pixel region into the opposite edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change. Thus, the optical black signal can be made more stable.

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Please amend the paragraph at page 16, line 27 through page 17, line 27 as follows:

a4 In a solid state image sensor device according to the third aspect of the present invention, at least one of the vertical signal lines in the first and second optical black pixel regions, which is at the side of the photo-sensitive pixel region, may be excluded from being short-circuited with the at least two vertical signal lines by the wiring, and at least one of the vertical signal lines in the first and second optical black pixel regions, which is at the opposite side of the photo-sensitive pixel region, may be excluded from being short-circuited with the at least two vertical signal lines by the wiring. When a solid state image sensor device according to the third aspect of the present invention is structured as such, then even if the signal potentials at the optical black pixels at the edge portion of the optical black pixel region close to the photo-sensitive pixel region are changed by light leaked from the photo-sensitive pixel region into the edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change. Furthermore, even if the signal potentials at the optical black pixels at the opposite edge portion of the optical black pixel region are changed by light leaked from a peripheral portion opposite to the photo-sensitive pixel region into the opposite edge portion of the optical black pixel region, it is possible to prevent the optical black level from being influenced by the change. Thus, the optical black signal can be made more stable.

Please amend the paragraph at page 20, line 23 through page 21, line 16 as follows:

a5  
corr In FIG. 1, reference numbers 1, 2, 3 and 10 represent an image sensing cell array (i.e., image sensing cell region, a vertical shift resistor, a horizontal ~~shift~~ shift resistor, and a timing signal generator, respectively. A plurality of unit cells 13 are arranged in a matrix form in the image sensing cell array 1, i.e., an image sensing cell area. Each of the unit cells 13 is composed of a photodiode 8 as a photoelectric conversion element, a read transistor 14 for

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reading electrical charges accumulated in the photodiode 8 as a signal, a driver transistor 15 which constitutes, together with a load transistor 12 described later, a source follower so as to amplify the read out signal and output an amplified signal, an address transistor 16 for selecting a horizontal line to be read, and a reset transistor 17 for resetting the charge of the photodiode 8. The load transistor 12 is arranged outside the image sensing cell array 1, and DC voltage is applied to the load transistor 12. The load transistor 12 is shared by the driver transistors 15 of the unit cells 13 of one vertical signal line.

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Please amend the paragraph at page 32, lines 7-24 as follows:

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FIGS. 9A and 9B show cross sections of unit cells of the optical black pixel regions in the present embodiment. The unit cell of ~~he~~ the optical black pixel region (1) shown in FIG. 7 is made as shown in, for example, FIG. 9A. That is, a photodiode opening 101 is provided beneath a light shielding layer 100 and covered by the light shielding layer 100. A photodiode (N-type area) 103 for accumulating electrical charge generated by photoelectric conversion is formed beneath the opening 101. The n-type region is isolated by a thick oxide layer 102. An impurity diffused region (P+ type region) 104 for making the isolation more effective is formed beneath the oxide layer 102 as an isolation layer. A P-well 105 is formed on a P-substrate 106, and the photodiode is formed in the well 105. An insulating film 107 is formed on the oxide layer 102, and the light shielding layer 100 is formed on the insulating film 107.

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